

THE ECONOMIC IMPACT OF NASA IN FLORIDA 2002



THE CENTER FOR BUSINESS AND
ECONOMIC RESEARCH
UNIVERSITY OF CENTRAL FLORIDA
DEPARTMENT OF ECONOMICS



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The Economic Impact of NASA in Florida--2002

STUDY HIGHLIGHTS

NASA spending in Florida declined throughout most of the 90's, but the trend turned around in 1998. By 2002 NASA purchases in Florida were almost back up to their 1994 level.

KSC and other NASA Centers spent \$1.4 billion in Florida for launch and space flight control operations (L&SFO) in FY 2002. This includes KSC facilities planning, expansion and maintenance.

The total spending consisted of \$838 million in salaries for civil service workers and on-site contractor employees and \$603 million in non-labor purchases.

KSC & Other NASA Centers awarded 448 L&SFO contracts in Florida in FY 2002. The value of individual contracts ranged from a low of \$2,000 to a high of \$400 million. Over 85% of the contracts went to prime contractors operating on-site at KSC.

The total number of KSC on-site L&SFO workers in FY 2002 was close to 15 thousand. On-site contractors employed 86% of the total. 84% of the on-site work force lived in Brevard County and another 14% commuted from other Central Florida counties.

Although 84% of the on-site workers lived in Brevard County, they received 95% of the wages. The larger Central Florida region (including Brevard) was home to 98.5% of the workers who received 98.5% of the total wages.

The average annual salary for on-site L&SFO workers was \$70 thousand in FY 2002. This was more than twice the \$33 thousand salary that is earned by the average Brevard County worker.

The Economic Impact of NASA in Florida--2002

STUDY HIGHLIGHTS

Three-quarters of NASA's spending on L&SFO non-labor purchases in Florida in FY 2002 was concentrated in five commodity categories—Aircraft and Missile Equipment (\$116M), Management and Consultant Services (\$67M), Services to Buildings (\$93M) and Complete Guided Missiles (\$42M)

In FY 2002 923 thousand out-of-state visitors came to the Kennedy Space Center Visitor Center. Out-of-state business visitors to KSC spent 4.5 thousand visitor nights in the local area. These two activities provided a combined \$22 million injection of into Florida's economy. 97% of this injection was concentrated in the Central Florida region.

At the state level each direct job at KSC was multiplied into 2.41 total jobs; each dollar of income was multiplied into \$1.80 total income and each dollar of non-labor purchases was multiplied into \$3.70 of total output production.

The initial direct spending in Florida of all KSC organizations and the activity generated by the multiplier process yielded a total economic impact in Florida of over \$2.2 billion in output, \$1.5 billion in income and 36 thousand jobs. The total impact on taxes was \$191 million in federal taxes and \$67 million in state and local taxes.

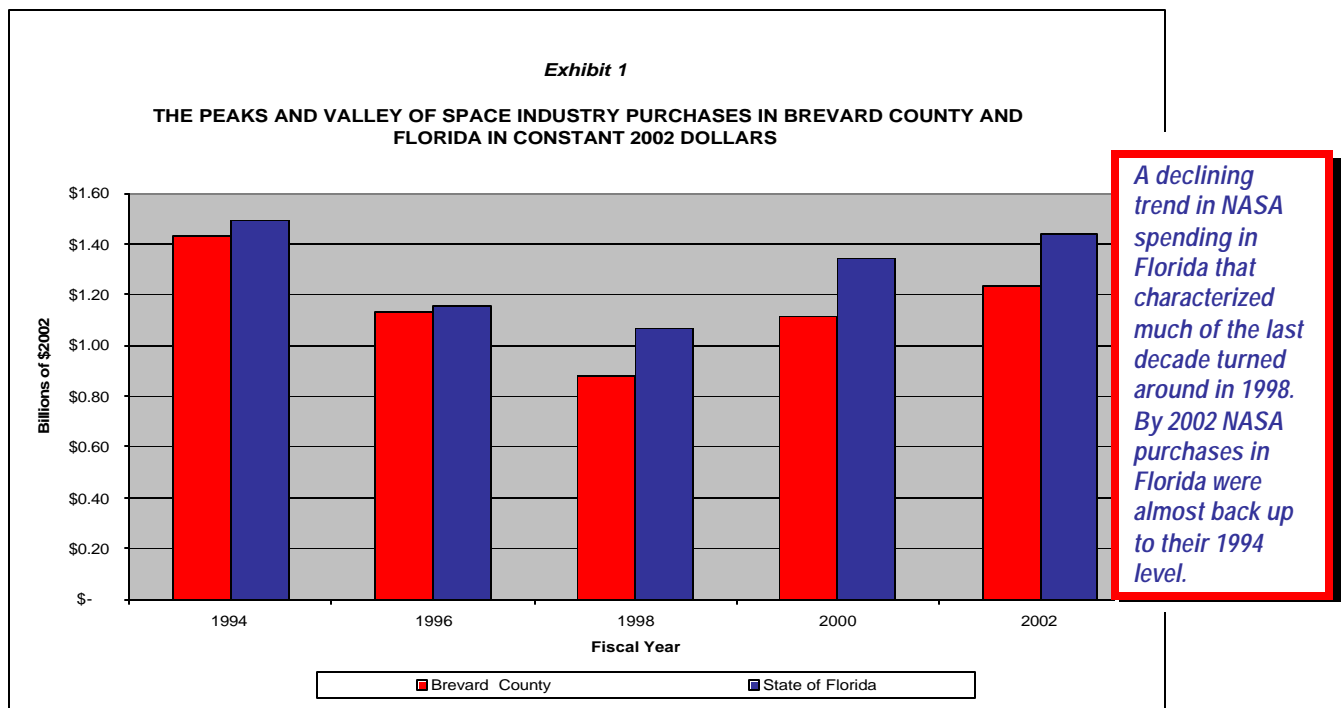
Brevard County enjoyed 70% of the output impact, 85% of the income impact and 76% of the jobs impact. The larger Central Florida region received 83% of the output impact, 95% of the income impact and 90% of the jobs impact.

NASA'S ECONOMIC PRESENCE IN FLORIDA

ENHANCING THE LIVES OF FLORIDA RESIDENTS

The earth shaking rumble of powerful rocket engines and the instant illumination of the night sky still sends a rush of excitement through the minds and souls of many Central Florida residents and visitors when a rocket is launched from the Kennedy Space Center (KSC). Just as the sights and sounds of a rocket launch brings excitement to the lives of many Central Florida people, the enormous operation that is required to make the launches possible releases a powerful blast of economic activity that flows through the businesses and households of Brevard County, the Central Florida region and other areas of the State. While the excitement of the launch is relatively short-lived, the economic effects of NASA operations in Florida are continuous and sustained. This is not to say that NASA spending in Florida doesn't fluctuate over time, but as shown in Exhibit 1, the overall level is fairly constant. In the most recent year, FY 2002, KSC and other NASA Centers injected over \$1.4 billion into the local and state economies. This spending set off a cycle of economic transactions that flowed throughout many sectors of these economies and created a multiplied level of total economic activity that far exceeded NASA's initial injection.

In addition to the economic activity brought about by NASA's spending on launch and space flight operations (**L&SFO**), there are a number of other activities directly associated with NASA that also add to its total economic impact in Florida. These include the local travel expenditures of out-of-state business and government personnel that travel to KSC to conduct business and the Kennedy Space Center

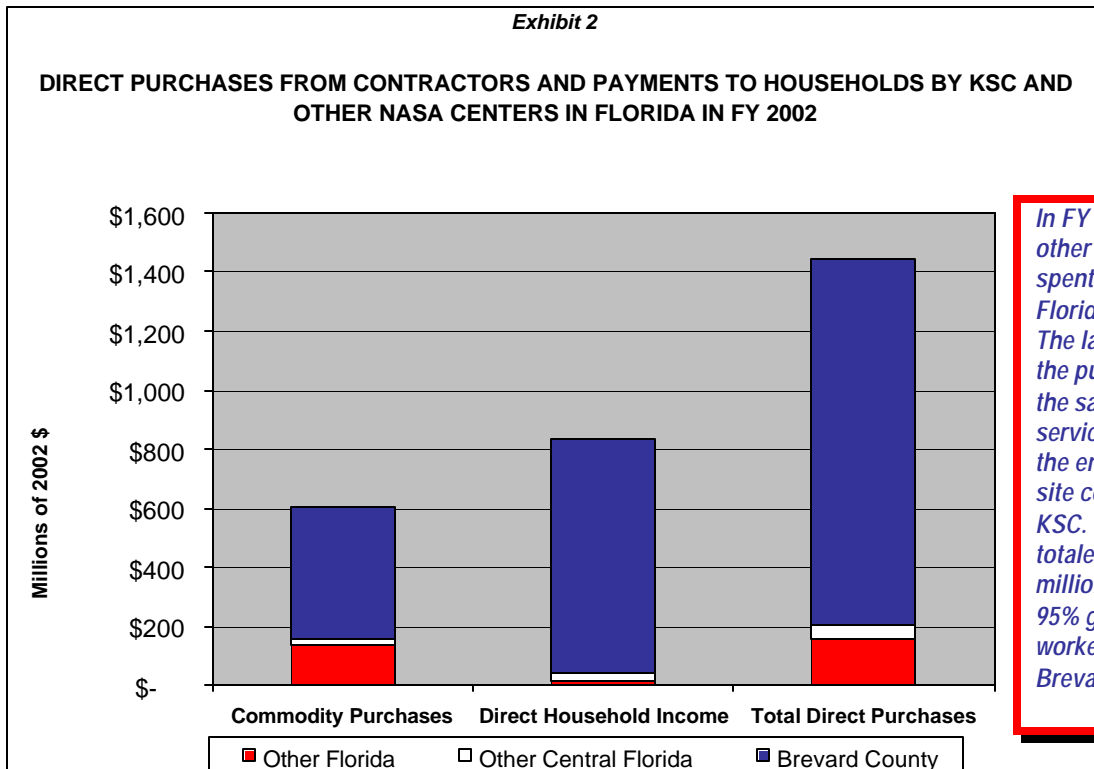


NASA'S LAUNCH AND SPACE FLIGHT OPERATIONS

Visitor Center's sales to out-of-state visitors. The economic impact of all of these activities is presented in this report.

NASA LAUNCH AND SPACE FLIGHT SPENDING IN FLORIDA

KSC and other NASA Centers spent \$1.4 billion on commodity and labor purchases in Florida in FY 2002 to support **L&SFO**. The largest share of this spending was to pay the wages of civil service workers and on-site contractor employees. These wages totaled over \$800 million in Florida with 95% going to workers living in Brevard County.



In FY 2002 KSC and other NASA Centers spent \$1.4 billion in Florida for L&SFO. The largest share of the purchases was the salaries of civil service workers and the employees of on-site contractors at KSC. These wages totaled over \$800 million in Florida with 95% going to workers living in Brevard County

	Other Florida	Other Central Florida	Brevard	Florida Total
Commodity Purchases	\$ 137	\$ 23	\$ 443	\$ 603
Direct Household Income	\$ 18	\$ 26	\$ 793	\$ 838
Total Direct Purchases	\$ 155	\$ 49	\$ 1,236	\$ 1,440

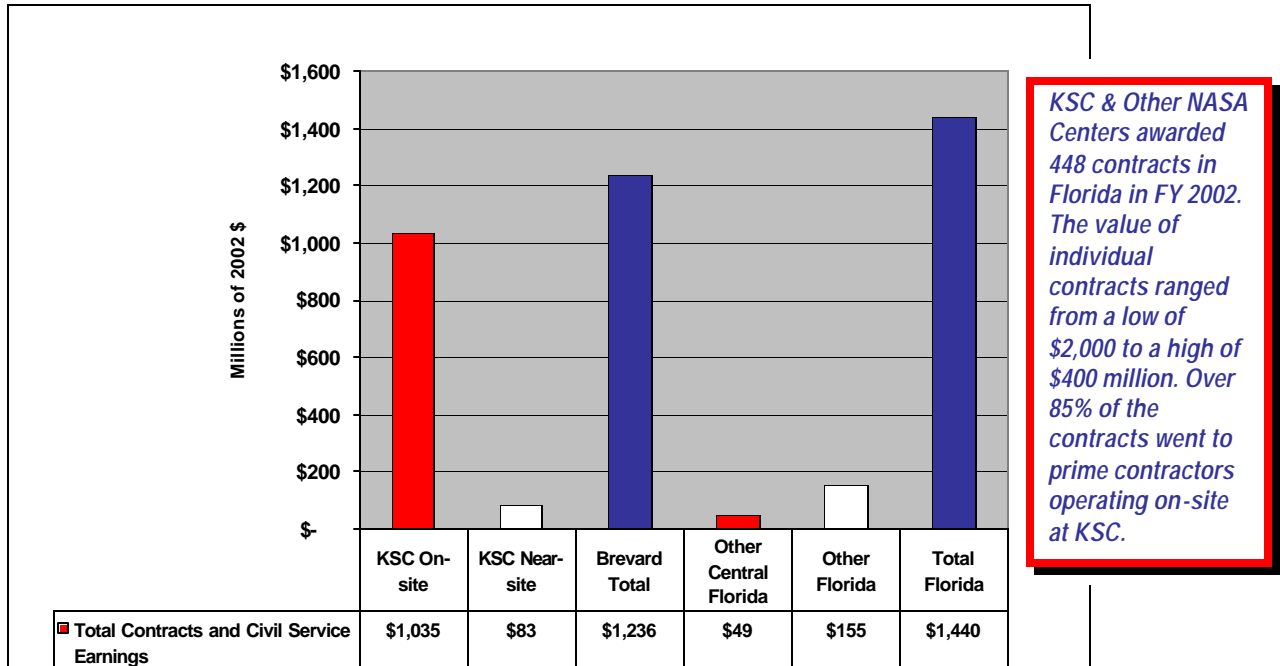
The primary responsibility of KSC in NASA's space program is the launch function. This includes both manned Space Shuttle launches as well as a growing number of operations in NASA's Expendable Launch Vehicle (ELV) program. To carry out its responsibilities, KSC awarded 215 separate contracts in FY 2002 ranging from a \$2,000 contract to a local communications equipment supplier to a \$310 million award to the firm that manages all of KSC on-site facilities and

NASA'S LAUNCH AND SPACE FLIGHT OPERATIONS

operations. The five largest contracts represented 80% of KSC's total awards. Eight other NASA Centers awarded a total of 233 contracts in Florida in FY 2002. These ranged from a \$10,000 award to a Brevard County engineering firm to the Johnson Space Center's \$400 million contract for space flight operations during shuttle flights.

Exhibit 3

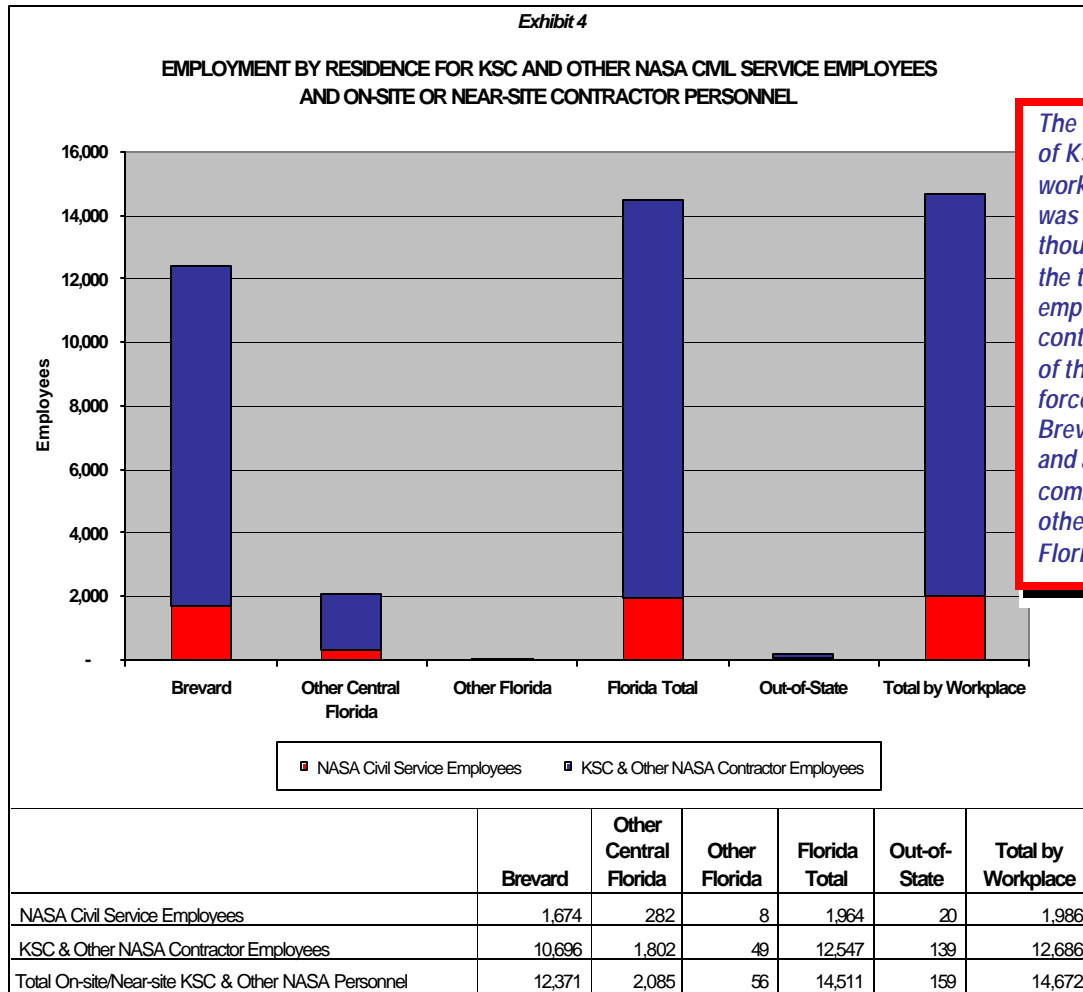
TOTAL SPENDING BY KSC AND OTHER NASA CENTERS IN FLORIDA BY PLACE OF PERFORMANCE



LAUNCH AND SPACE FLIGHT EMPLOYMENT AT KSC

There were close to 15 thousand on-site and near-site **L&SFO** workers at KSC in 2002. This includes workers involved in launch and space flight control and those workers involved in planning, maintenance and operation of KSC facilities. The overwhelming majority (86%) of on-site workers was employed by NASA prime contractors. The remainder was federal civil service workers employed by NASA. As might be expected most of the employees at KSC lived in Brevard County. However, as illustrated in Exhibit 4, over two thousand workers commuted from nearby Central Florida counties, a small number of workers lived in other Florida counties and 159 workers resided outside the State.

NASA'S LAUNCH AND SPACE FLIGHT OPERATIONS

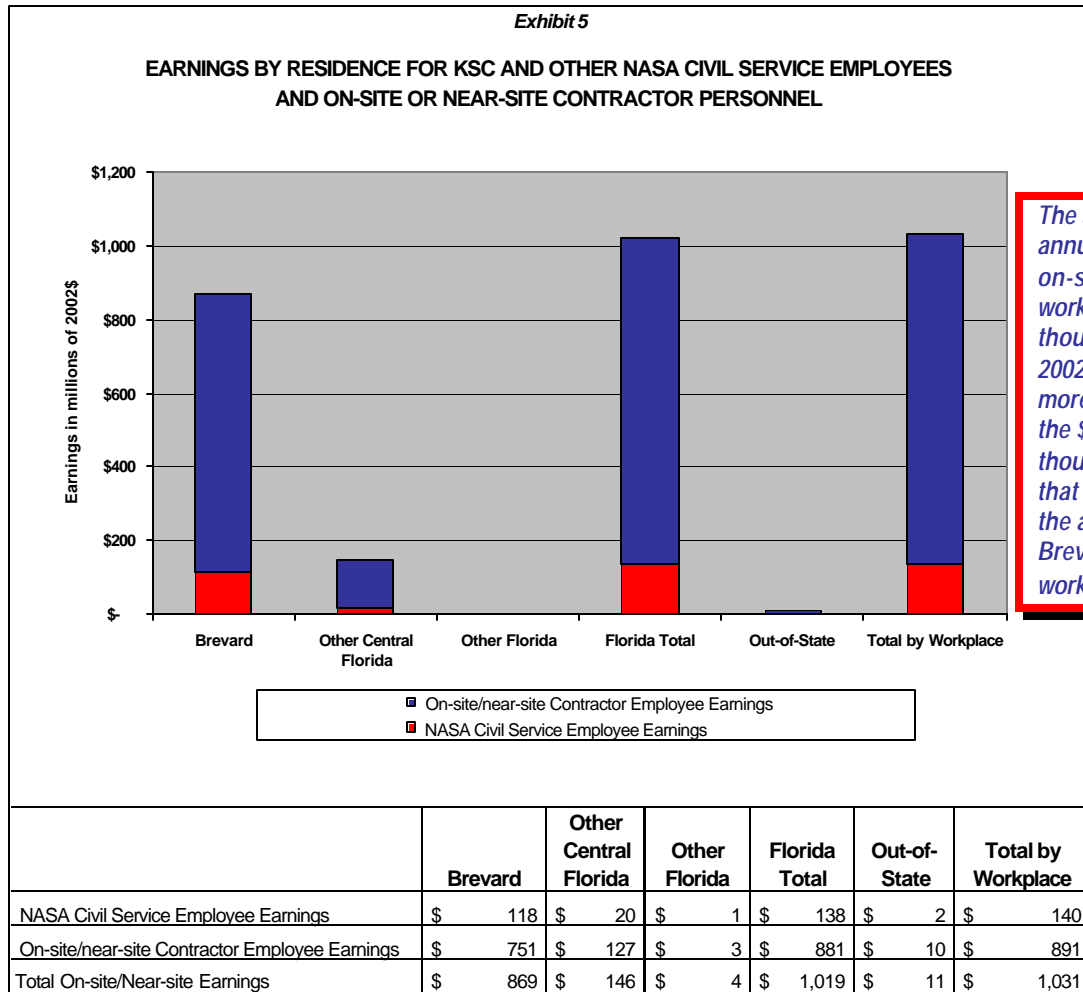


The total number of KSC on-site workers in FY 2002 was close to 15 thousand. 86% of the total was employed by prime contractors. 84% of the on-site work force lived in Brevard County and another 14% commuted from other Central Florida counties.

LAUNCH AND SPACE FLIGHT EARNINGS AT KSC

Contract and civil service workers in **L&SFO** at KSC received over \$1 billion dollars in earnings in FY 2002. A large majority of the workers are highly trained engineers, scientists and technicians that command relatively high salaries. Accordingly the average annual salary for these workers was \$70 thousand, which was more than twice the \$33 thousand salary that is earned by the average Brevard County worker.

NASA'S LAUNCH AND SPACE FLIGHT OPERATIONS



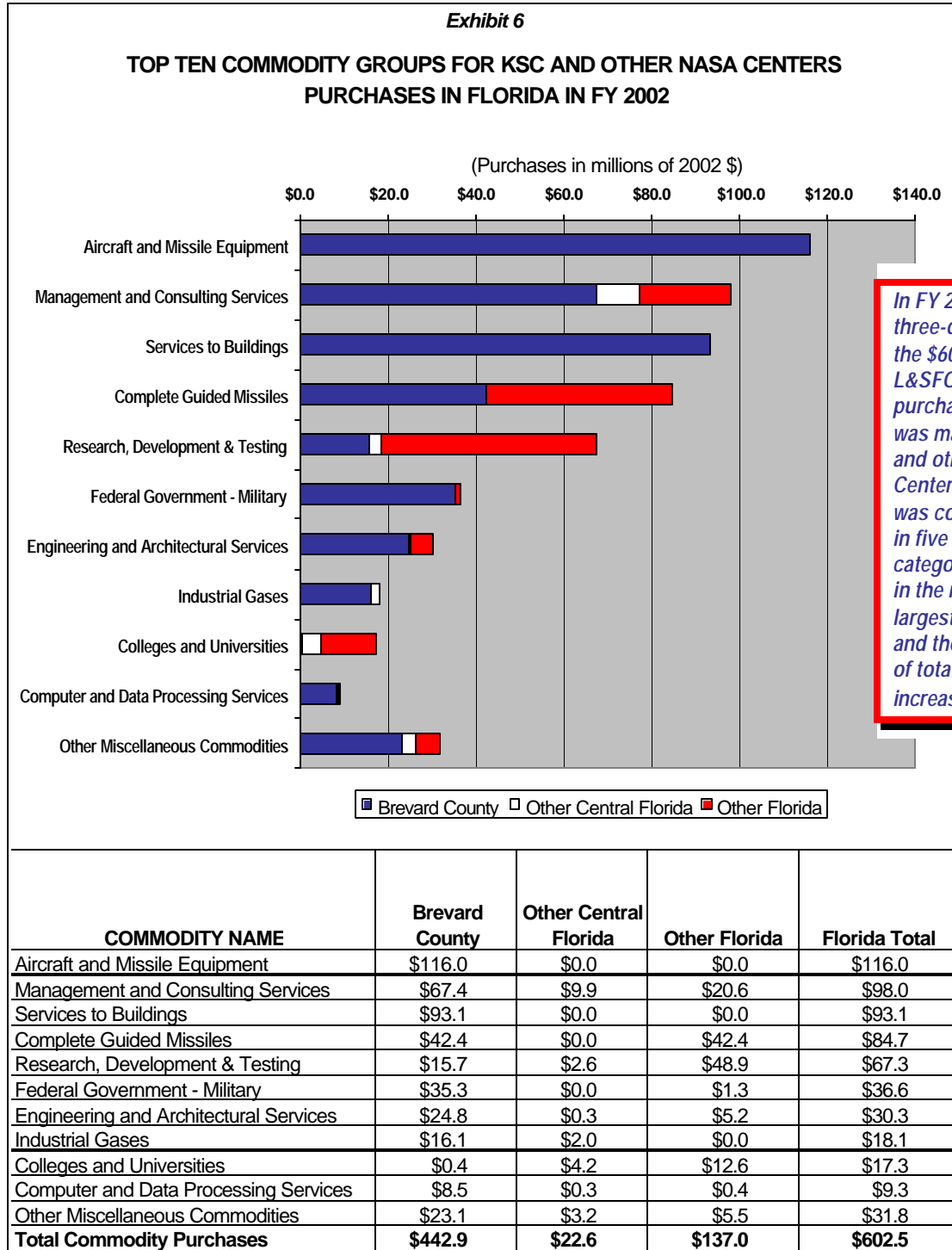
LAUNCH AND SPACE FLIGHT NON-LABOR PURCHASES IN FLORIDA

NASA's **L&SFO** non-labor purchases in Florida were concentrated in a relatively small number of categories. As revealed in Exhibit 6, the top five commodity categories constituted over three-quarters of the \$600 million in non-labor purchases that were made by KSC and other NASA Centers in Florida in FY 2002. Bring in the next five largest categories raises the proportion of total purchases to 95%. The level of concentration that is suggested by these percentages masks the fact that the purchases of several of the prime contractors are disbursed to a larger number of sub-contractors and to a wide range of businesses.

The largest set of **L&SFO** non-labor purchases by NASA in FY 2002 was the \$116 million spent on **Aircraft and Missile Equipment**. The related category of **Complete Guided Missiles** received another \$85 million. The \$67 million for **Management and Consulting Services** and the \$93 million in the **Services to**

NASA'S LAUNCH AND SPACE FLIGHT OPERATIONS

Buildings category were for the purchases of materials and other non-labor services required by the major on-site contractors that plan and manage launch and space flight control operations and KSC facilities management activities.



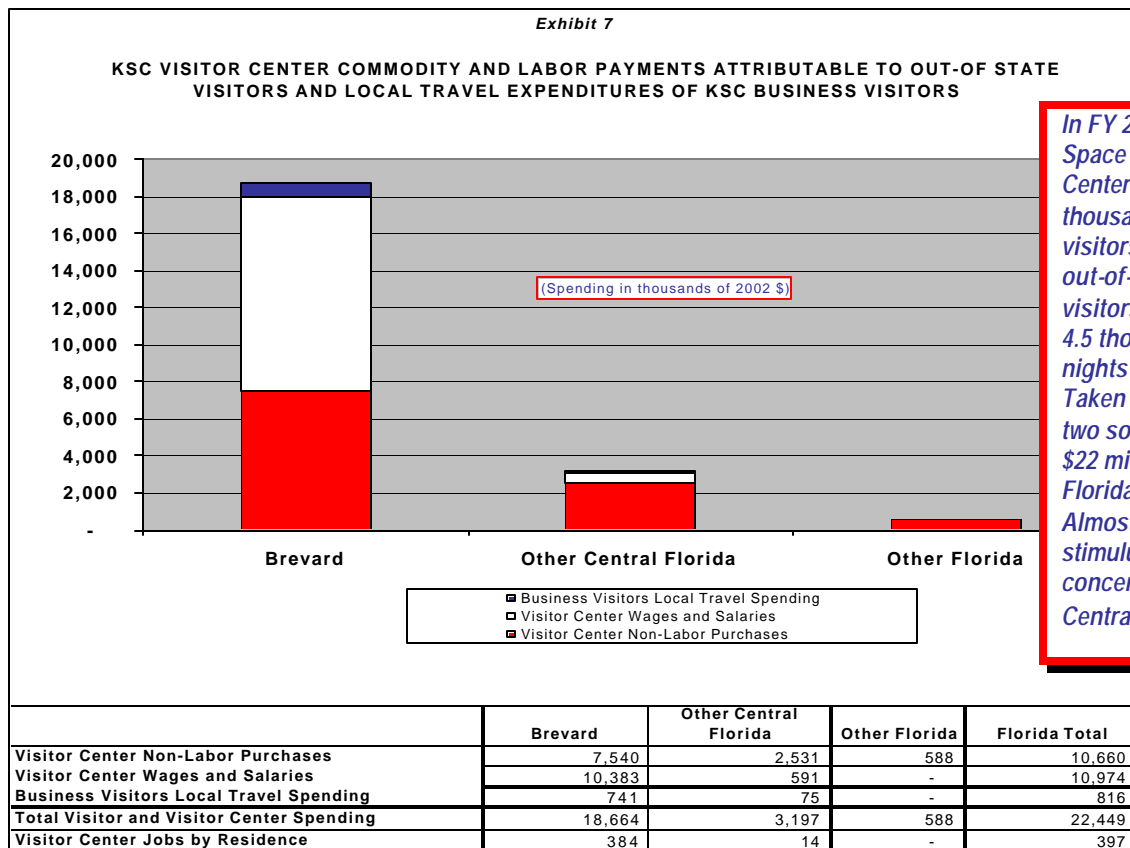
KSC VISITOR CENTER AND BUSINESS VISITORS

VISITOR CENTER AND BUSINESS VISITOR SPENDING

KSC's economic presence in Florida is not just limited to the contracts and employees that are required to carry out space operations. In FY 2002 923 thousand out-of state residents visited the KSC's Visitor Center and spent over \$37 million on goods and services provided by the Visitor Center. The Visitor Center had 641 employees which it paid almost \$18 million in wages. In addition to its payroll expenses, the Center spent \$28 million to purchase the merchandise and services that are required to operate the facility. In considering the economic impact of Visitor Center activities in Florida, it is necessary to make adjustments for the proportion of these activities that are serving the needs of local in-state guests. The logic behind such an adjustment is that if these local visitors had not spent money at the Visitor Center, they would have spent it with other local businesses within the region and the result would be just a transfer of economic activity. Based on the geographic distribution of visitors, it was determined that 62% of the total activity at the Visitor Center should be attributed to out-of-state visitors. The adjusted amounts were \$11 million in salaries and \$10.6 million in other non-labor purchases for a total injection of \$22 million.

One other important source of NASA's economic stimulus in Florida is the local travel expenditures of out-of-state business visitors that came to KSC. This includes visitors that come from NASA Headquarters and other NASA Centers and contractor personnel. The purpose of the visits includes pre-launch meetings and reviews, general information exchange and a variety of other business functions. It is estimated that there were over 716 such business visitors in FY2002 that stayed a total of 4,468 visitor nights in the Central Florida area. Their total local travel purchases for lodging, food, car rentals and other miscellaneous items amounted to over \$816 thousand in FY 2002. All of these expenditures represented an injection of outside money into the local economy. The purchases by the Visitor Center attributed to out-of-state visitors and the local travel expenditures of KSC business visitors' resulted in a total injection of \$22.5 million dollars into the local economy in FY 2002. The details of this injection are show in ***Exhibit 7***.

THE TOTAL ECONOMIC IMPACT OF NASA IN FLORIDA



In FY 2002 the Kennedy Space Center Visitor Center served 923 thousand out-of-state visitors. In addition, out-of-state business visitors to KSC spent 4.5 thousand visitor nights in the local area. Taken together these two sources provided a \$22 million stimulus to Florida's economy. Almost this entire stimulus was concentrated in the Central Florida region.

THE TOTAL ECONOMIC IMPACT OF NASA IN FLORIDA

THE MULTIPLIER PROCESS

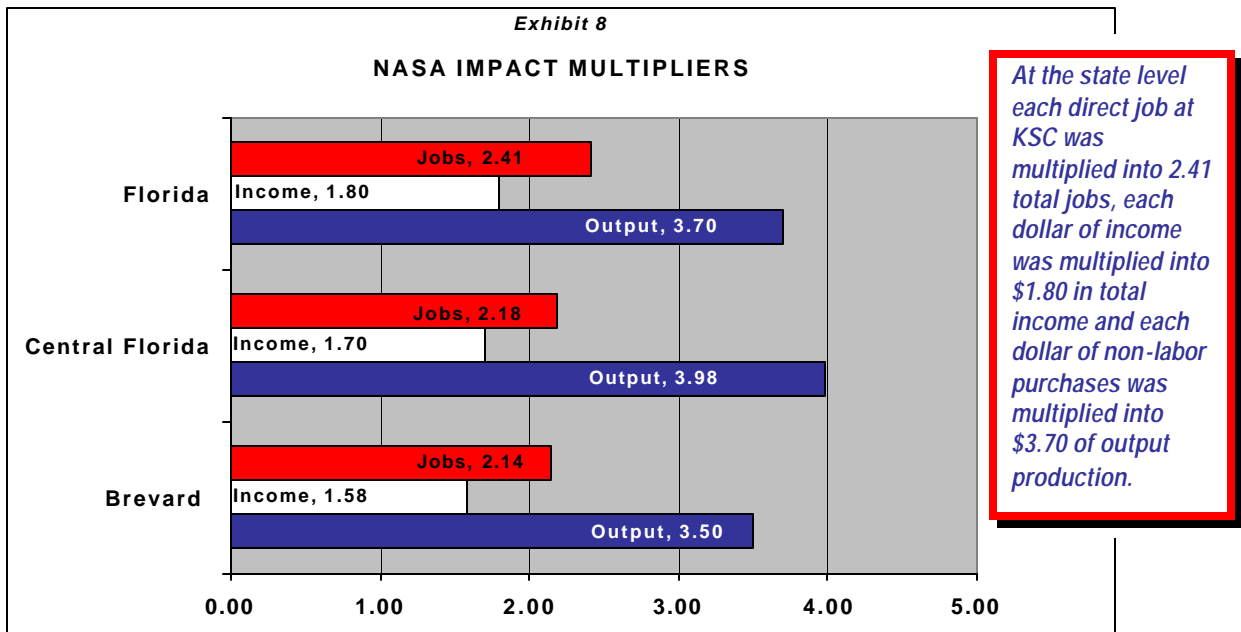
The economic activity generated by NASA organizations in Florida begins, but does not end, with the direct purchases of these organizations and the wage payments to their workers. This first round of spending generates a secondary set of economic interactions in local businesses that supply goods and services to NASA contractors and employees. These businesses, in turn, pay wages to their employees and buy goods and services from their own suppliers and the process continues through many subsequent rounds of purchases. The cumulative effects of all of the rounds of economic interaction are referred to as the regional economic multipliers.

The tracing and accumulation of all of the many rounds of economic activity that are set in motion by NASA's initial stimulus requires a complex set of economic models that map the structure of the economy and the way in which the many sectors of the economy interact to support each other. These models are referred to as regional input-output models. The specific models used in this study utilize a highly detailed breakdown (500 plus economic sectors) of the economy to trace

THE TOTAL ECONOMIC IMPACT OF NASA IN FLORIDA

economic transactions. Separate models were built for Brevard County, the larger seven-county Central Florida region and the State of Florida as a whole.

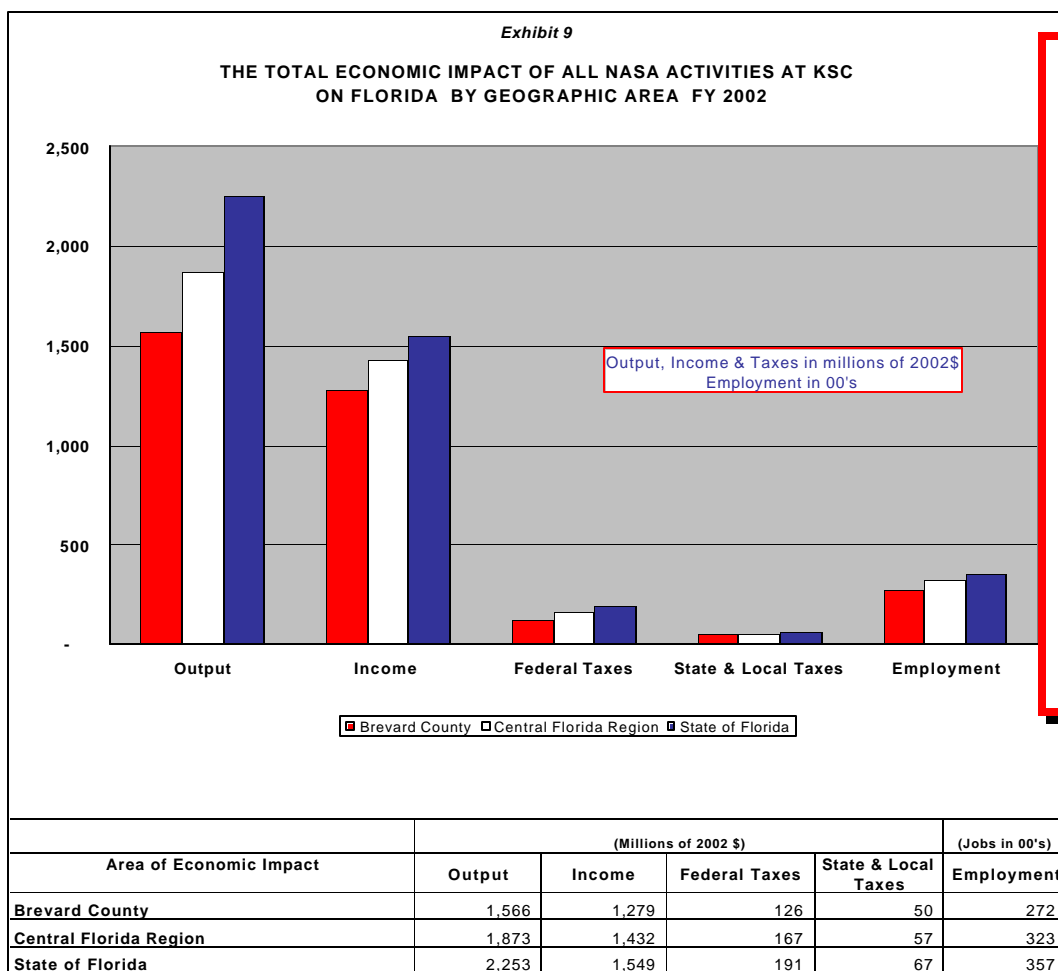
The multipliers that were calculated for each of the geographic levels of analysis are shown in **Exhibit 8**. The jobs multipliers for the State as a whole indicates that each direct job that was created by NASA civil service and contractors and the Visitor Center was multiplied into 2.41 total jobs through out Florida. It should be noted that this represents the direct job itself plus 1.4 jobs that were generated through the multiplier process. The Florida income multiplier indicates that each dollar of direct wages that was paid at the KSC complex resulted in \$1.80 of total income in the State. The output multiplier shows that each dollar of direct procurement purchases generated a powerful \$3.70 in statewide output. Similar interpretations apply to the Central Florida and Brevard County multipliers.



THE TOTAL ECONOMIC IMPACT OF NASA IN FLORIDA

THE TOTAL ECONOMIC IMPACT

When all of the transactions starting with NASA's direct spending to the last round of ripple transactions are added together, the total economic impact on Florida in FY 2002 was over \$2.2 billion in regional production, \$1.5 billion in earned income and 36 thousand jobs. This activity also generated \$191 million of federal taxes and \$67 million of state and local taxes. As might be anticipated the lion's share of the impact—70% of the output impact, 85% of the income impact and 76% of the employment impact—occurred in Brevard County.



In FY 2002 the total economic impact of NASA in Florida was over \$2.2 billion in regional production, \$1.5 billion in earned income and 36 thousand jobs. This activity also generated \$191 million of federal taxes and \$67 million of state and local taxes-- 70% of the output impact, 85% of the income impact and 76% of the jobs impact occurred in Brevard County.

SUMMARY AND CONCLUSION

SUMMARY AND CONCLUSION

NASA's presence in Brevard County represents an economic force that is unmatched by any other single economic entity in Florida. The large number of highly paid employees and the high dollar contracts that are awarded within the State have an economic potency that is extraordinary by any standard. In FY 2002 the impact of KSC space operations and associated activities in Brevard County created \$2.25 billion in output, \$1.5 billion in income and was directly and indirectly responsible for 36 thousand jobs. The economic impact was highly concentrated in Brevard County, but also spilled over into surrounding Central Florida counties and throughout the State. Although Florida's space budgets have experienced some ups and down over the years, the nation's continued interest and commitment to space exploration and the ever increasing demand for commercial and military satellites virtually guarantees that the economic force that is provided by NASA in Florida is here to stay.

Impact Models: The economic impact analysis presented in this report is generated by a set of regional input-output models constructed by the UCF Center for Business and Economic Research using the Minnesota IMPLAN Groups (MIG) software package. Structural data for the models was also provided by MIG.

Study Areas: Input-output models were constructed for three geographic areas—Brevard County, Central Florida (which includes Brevard, Flagler, Lake, Orange, Osceola, Seminole and Volusia Counties) and the State of Florida.

Data Sources: All data and numbers reported and used in this study are based on reports and data files provided through the Office of KSC's Chief Financial Officer or found on the KSC internet site. Numbers reported in the impact section of the report were generated by the economic impact models constructed for this study.

Methodology and Study Details: The methods of analysis, report assumptions and detailed tables of results are available upon request.